U.S. Department
of Transportation
Federal Highway Administration

400 Seventh St., S.W.
Washington, D.C. 20590

February 24, 2005

In Reply Refer To: HSA-10/SS-128

Mr. Mark W. McGinnis
Northwest Pipe Company
Traffic Systems Group
200 SW Market Street, Suite 1800
Portland, Oregon 97201

Dear Mr. McGinnis:

Thank you for your letter of July 14, 2004, requesting Federal Highway Administration (FHWA) acceptance of your company's Poz Loc Slipbase Casting 2709 as a breakaway feature for sign supports for use on the National Highway System (NHS). Accompanying your letter was a letter report from Texas Transportation Institute and videos of the crash tests. You requested that we find this slipbase acceptable for use on the NHS under the provisions of National Cooperative Highway Research Program (NCHRP) Report 350 "Recommended Procedures for the Safety Performance Evaluation of Highway Features." You provided additional information on February 14 and February 22 in response to our requests.

Introduction
Testing of the supports was in compliance with the guidelines contained in the NCHRP Report 350, Recommended Procedures for the Safety Performance Evaluation of Highway Features. Requirements for breakaway supports are those in the American Association of State Highway and Transportation Officials' Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

The test article consisted of a 73 mm (2.875 inch) outside diameter schedule 10 pipe support with a crossbar at the top, and a 1200 x 1200 mm x 16 mm (48 x 48 x 5/8 inch) plywood sign panel attached. The cast iron slipbase device weighs 5 kg (11 pounds), the pipe was 4.6 kg (10 pounds, 4 oz.), and the sign panel was 14.8 kg (32 pounds, 8 oz.)

Testing
Pendulum bogie testing was conducted on your company's devices. The mass of the test vehicle was 820 kg in all tests. The complete devices as tested are shown in the Enclosures.

Test #	NCHRP 350	Speed	Impact Height	Occup. Speed	Delta V
1	3-60	35.1 km/hr	18 inches	None	0.47 m/s
2	3-60	35.1 km/hr	24 inches	None	0.47 m/s

Occup. Speed: Occupant Impact Speed: Speed at which a theoretical front seat occupant will contact the windshield. In meters per second.
Delta V: Speed change of the test vehicle. In meters per second.

Test #1 was conducted at the typical 18-inch bumper height for small cars (and pendulum bogie noses.) Test #2 was conducted at 24 inches above the ground to investigate a concern of the Texas Department of Transportation regarding the bending of thinner wall tubes. They surmised that low speed impacts with taller vehicles, especially in the light truck class, could cause a bending failure prior to slip activation. The slipbase performed as intended at both heights. Calculations based on the FHWA memorandum of November 12, 1993, performed by the Texas Transportation Institute show the expected velocity change during a 100-km/hr impact to be 0.48 m/s.

Findings
The results of the low-speed bogie testing and the high speed extrapolations met the FHWA requirements and, therefore, the devices described above and shown in the enclosed drawings for reference are acceptable for use as Test Level 3 devices on the NHS under the range of conditions tested, when proposed by a State.

Please note the following standard provisions that apply to the FHWA letters of acceptance:

- Our acceptance is limited to the crashworthiness characteristics of the devices and does not cover their structural features, nor conformity with the Manual on Uniform Traffic Control Devices.
- Any changes that may adversely influence the crashworthiness of the device will require a new acceptance letter.
- Should the FHWA discover that the qualification testing was flawed, that in-service performance reveals unacceptable safety problems, or that the device being marketed is significantly different from the version that was crash tested, it reserves the right to modify or revoke its acceptance.
- You will be expected to supply potential users with sufficient information on design and installation requirements to ensure proper performance.
- You will be expected to certify to potential users that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that submitted for acceptance, and that they will meet the crashworthiness requirements of the FHWA and the NCHRP Report 350.
- To prevent misunderstanding by others, this letter of acceptance, designated as number SS-128 shall not be reproduced except in full. As this letter and the supporting documentation which support it become public information, it will be available for inspection at our office by interested parties.

- The Poz-Loc Slip Base Casting 2709 is a patented device and is considered "proprietary." When proprietary devices are *specified by a highway agency* for use on Federal-aid projects they: (a) must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with existing highway facilities or that no equally suitable alternative exists or; (c) they must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. These provisions do not apply to exempt non-NHS projects. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411, a copy of which is enclosed.
- This acceptance letter shall not be construed as authorization or consent by the FHWA to use, manufacture, or sell any patented device for which the applicant is not the patent holder. The acceptance letter is limited to the crashworthiness characteristics of the candidate device, and the FHWA is neither prepared nor required to become involved in issues concerning patent law. Patent issues, if any, are to be resolved by the applicant.

Sincerely yours,

/Original Signed by Harry W. Taylor/

~for~

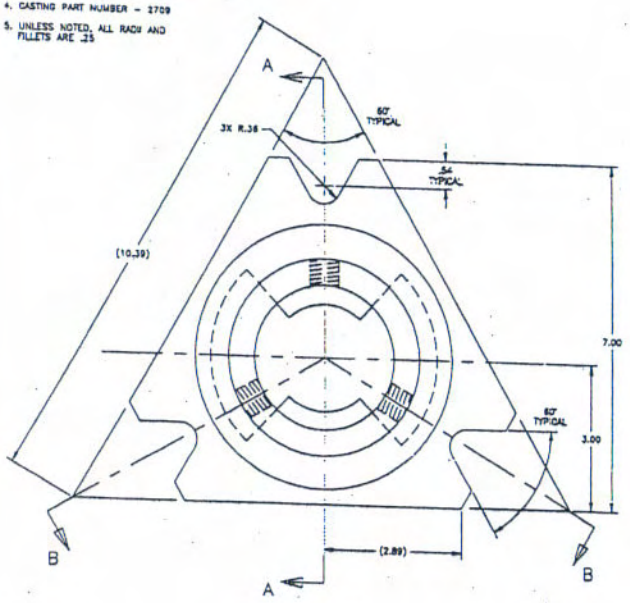
John R. Baxter, P.E.
Director, Office of Safety Design
Office of Safety

Enclosures

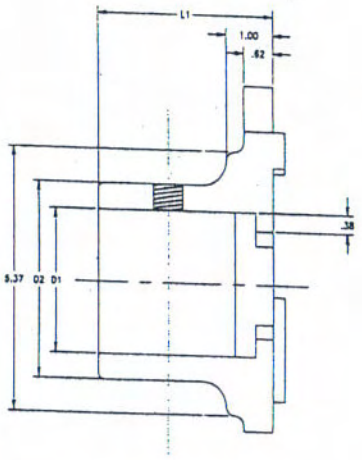
FHWA:HSA-10:NArtimovich:tb:x61331:2/23/05
File: h://directory folder/artimovich/SS128-NWpipeFIN
cc: HSA-10 (Reader, HSA-1; Chron File, HSA-10;
N.Artimovich, HSA-10)

NOTES:

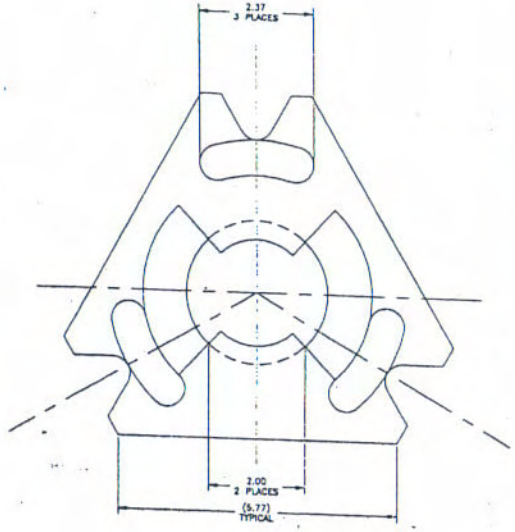
1. MATERIAL: ASTM A-536 GRADE 65-45-12 DUCTILE IRON
2. HOT DIP GALVANIZE PER ASTM A-153
3. CLEAN ID BORE AND COUNTERBORE AFTER GALVANIZING TO REMOVE EXCESS ZINC.
4. CASTING PART NUMBER - 2709
5. UNLESS NOTED, ALL RADII AND FILLETS ARE .25



TOP VIEW

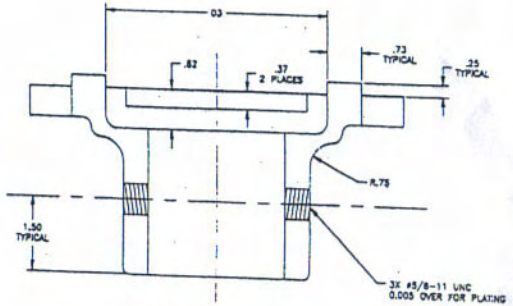


SECTION A-A



BOTTOM VIEW

SIZE	PART NO. (LBS)	D1	D2	D3	L1
2½"	SB-250-C (10.5)	2.83	4.00	4.75	3.75



SECTION B-B

Unless Noted: Tolerances .XX - +/- 0.010	Northwest Pipe Co.
	SLIPBASE CASTING 2709
PCL/LP	SIZE D — DWG NO. SB 6621 C — REV
Rev 4/30/02	SCALE NTS — SHEET 1 OF 1